US Army Corps of Engineers ®
Engineer Research and Development Center

RECNOTES
NATURAL RESOURCES RESEARCH PROGRAM

Vol R-01-1 May 2001

Do Corps of Engineers Lakes Benefit Neotropical Migratory Birds?

by H. Roger Hamilton and Richard A. Fischer, Engineer Research and Development Center

Introduction

The U.S. Army Corps of Engineers has management jurisdiction of over 450 man-made lakes and an additional 24,000 miles of inland navigation streams in the continental United States. The reservoir projects alone include approximately 11.5 million acres of land and water and a total shoreline that exceeds the coastline of the continental United States. The reservoirs were impounded for flood control, navigation, hydroelectric power production, and other human uses. Natural resources associated with these projects are important for a variety of reasons, some of which are included in the stated congressionally authorized justifications for the projects. They also are the source of recreation benefits that have led to fish and wildlife management responsibilities for the agency.

One important function performed by these water resources development projects has only recently been recognized. Many of the projects are located along the routes of numerous neotropical species of birds that migrate annually between their breeding grounds in North America and wintering areas in Mexico, Central America, South America, and the Caribbean. Approximately half of all bird species that nest in the United States are classified as neotropical migratory birds. These approximately 360 species include many songbirds, shorebirds, and some waterfowl and birds of prey. Several Corps lakes are strategically located along major migratory flyways (Figure 1), and it appears that they may provide important habitats for many breeding bird species, act as important stopover habitat for migrating birds, or provide wintering habitat for birds that reside in North America year-round.

Western Yellow Billed Cuckoo (from Guilfoyle 2001)

The United States has evolved from a land of wilderness punctuated by small islands of human development to a nation dominated by massive landscape alterations and development, with small islands of remnant ecosystems in a sea of urbanization. Juxtaposed among these habitat islands throughout the continent are dams on major rivers. The lakes impounded behind those dams and the associated land around their margins provide habitat clusters or islands on the landscape that might be very important to several

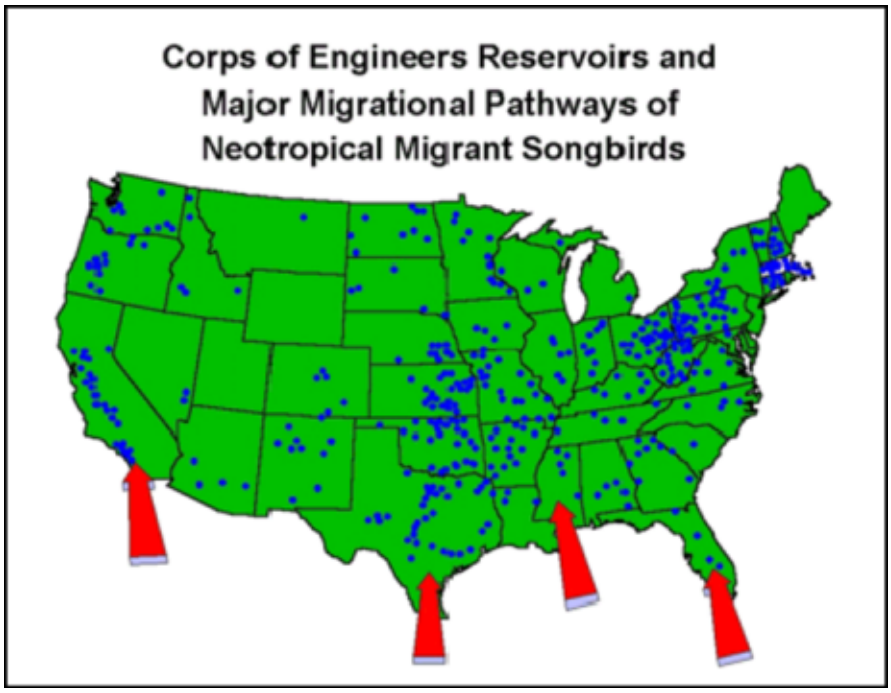


Figure 1. Most Corps of Engineers reservoir projects occur along major migration routes of migratory birds

migratory species as resting and feeding areas during spring and fall migration. These islands seem to have the habitat components that are important to many bird species. The many miles of riverbanks and shoreline with their associated riparian habitat (i.e., land and water interface) may be the most important ingredient of all.

A Shift in Recreation Use

American preferences for wildlife-related recreational experiences have been evolving over the past three decades from consumptive uses such as hunting to nonconsumptive uses including birding and wildlife observation. Although consumptive uses of natural resources remain important outdoor recreation activities, we are seeing increased interest in wildlife-related activities that result in minimal disturbance to animals and their habitats but yield intrinsic and spiritual rewards to the visitors.

Shorelines of Corps lakes are heavily used for outdoor recreation, and fish and wildlife management is conducted in support of recreation. There is great national interest in birds and many people are cashing in on this big business. Bird-watching ranks second only to gardening as America's favorite hobby. A 1994 National Recreation Survey noted that birdwatching has become one of the fastest-growing recreational activities in the United States, ahead of other popular activities such as hiking, skiing, and golf. A recent study estimated that 65 million people (43 percent of households) provide food for wild birds; as a nation we spend at least $2.5 billion annually on bird-related products. That number more than doubles when expenses on goods and services associated with recreational birding are included, such as money spent on gas, hotels, and food. In 1991, more than 24.7 million people reported they traveled to watch birds. We also estimate that one out of every ten Americans (about 25 million people) visit a Corps lake at least once each year, many of them primarily to view birds and other wildlife.

Recent Activities

An organization called Partners in Flight (PIF) was launched in 1990 in response to growing concerns about declines in the populations of many land bird species, and to emphasize the conservation of birds not covered by existing conservation initiatives. The initial focus was on neotropical migratory species, but the focus has spread to include most land birds and other species requiring terrestrial habitats. PIF is a cooperative effort involving partnerships among federal, state, and local governmental agencies, philanthropic foundations, professional organizations, conservation groups, industry, the academic community, and private individuals. PIF believes that the resources of public and private organizations in North and South America must be combined to achieve success in conserving bird populations in this hemisphere. Dr. Richard Fischer represents the Corps of Engineers in this organization.

The concern about birds in North America extends far beyond land birds, however. Recently, a more comprehensive approach to bird conservation, called the North American Bird Conservation Initiative (NABCI), was launched with the focus of providing conservation of all bird species within North America. This initiative, in coordination with Canada and Mexico, includes comprehensive bird conservation, melding together PIF, the North American Waterfowl Management Plan, the United States Shorebird Conservation Plan, and the North American Colonial Waterbird Conservation Plan.

One of PIF's activities is development of a Bird Conservation Plan for each of the approximately 58 physiographic regions of the United States. These plans identify species and habitats most in need of conservation, and

establish objectives for bird populations and habitats. Some Corps Resource Managers have been involved in the bird conservation planning effort. Steve Lee, Resource Manager at Caesar Creek Lake in Ohio, has participated in the Ohio Working Group of PIF since its inception in 1993. He has been instrumental in compiling a list of all land management agencies in Ohio and their research needs. The committee has also compiled a comprehensive management handbook that includes life histories of target species and management leaflets for particular habitat groups.

Unresolved Questions

We believe that Corps lakes and their associated wetlands, riparian zones, and upland communities collectively provide resources that are very important to the life histories of many species of birds. Habitats associated with these lands likely provide essential areas for breeding, nesting, wintering, resting during migration, and feeding. However, little has been done to substantiate that premise. Several important questions remain unresolved; the answers to them could provide significant insights that would guide resource management actions. Some of these questions relate to land management decisions, others to a lack of inventory, monitoring, and research efforts.

1. How wide a buffer strip is needed adjacent to lakes and river/stream systems for different species of birds? Many Corps lakes were developed under the restrictive land acquisition policies of the 1950s, which permitted acquisition of only enough land to satisfy the conventional purposes of flood control, navigation, and hydropower. The Army/Interior Joint Acquisition Policy was implemented in 1962 requiring that wider buffers be purchased around reservoirs to preserve the integrity of the shoreline for fish and wildlife and outdoor recreation. Because buffer strips adjacent to water sources provide habitat of variable quality and suitability depending on width, structure, and species composition, the type of Corps project (and hence, the width of buffer around the lake) may have significant implications for the relative importance of buffer strips in a region. There is an emerging body of research on the necessary width of buffer strips adjacent to streams and rivers for birds, but it is unclear how applicable this information is to bird communities in lakeshore buffer strips.

2. Is the size of the project important? The average Corps lake is about 25,000 acres of land and water. Corps lakes often represent a type of island on the landscape that offers resources different from those of the surrounding landscape. Size and configuration of those islands may be important to migratory birds.

3. Are the locations and distances between projects along the migratory routes appropriate for rest areas? As birds migrate, many must periodically rest and replenish energy reserves. Improved technologies associated with NEXRAD and Doppler radar, which are successfully being used to track large flocks of migratory birds in spring and fall, may assist in determining the relative use of Corps lands during migration.

4. Is the timing of reservoir fluctuations important to migratory birds? Should adjustments be investigated to accommodate migrants without interference with project operations? Most lake levels fluctuate periodically to accommodate authorized project purposes such as flood control and hydroelectrical power production. Saylorville Lake in Iowa recently has been designated by the American Bird Conservancy and National Audubon Society as a globally significant "Important Bird Area" since significant numbers of migrant waterbirds use the aquatic area as a stopover point during migration. Although this designation does not have any legal influence on project operations, there may be opportunities to manipulate the pool in a manner consistent with habitat needs of these species during migration.

5. Would documenting the use of Corps lands by migrating birds enhance recreational use of these projects by the public? Many National Wildlife Refuges, because of their quality bird habitat coupled with great publicity, attract hundreds of thousands of birders each year, providing a massive financial boost to many local communities proximal to these sites. For example, the birders swarming to the Rio Grande Valley of Texas to view birds spend in excess of $90 million annually. More than 100,000 people swarm to Chincoteague National Wildlife Refuge in Virginia during migration, and spend in excess of $10 million on birding-related goods and services. Other similar examples occur at other locations around the country. Improved information on bird use of Corps lands coupled with better publicity could dramatically increase use of these lands by recreational birders at various times of the year. The economies of local communities adjacent to these projects certainly would receive a boost from increased use by the public. Corps lakes play an important role in the health and vigor of bird populations that are enjoyed both within and beyond the project boundaries.

6. Do Corps lakes encourage population increases of parasitic birds at the expense of desirable species? What are the management implications? Habitats

provided by Corps projects may not always be beneficial or may promote suitable habitat for undesirable species. For example, brown-headed cowbirds (*Molothrus ater*) thrive in open areas and fragmented forests interspersed with openings. This species parasitizes the nests of songbirds and can significantly affect reproductive success.

Numerous other unanswered questions also need to be addressed. For example, which species are most benefitted by habitat associated with Corps lakes? Do neotropical migrants key in on open waters and adjacent riparian habitats associated with Corps lakes? Which Corps projects are most important as resting areas, feeding areas, or breeding areas? What are the relative benefits of Corps projects to different taxonomic groups of birds (i.e., landbirds, shorebirds, colonial wading birds, waterfowl, raptors)? Do Corps lands act as source populations for other habitats?

Management Implications

Collectively and individually, Corps lakes represent unique and important resources serving a variety of purposes. Corps lakes are an important habitat for many of the species of birds that migrate through, and winter and breed, in the United States. One-half of these species are neotropical migrants. However, little is known about the role the Corps plays or what management prescriptions are needed on Corps lands to improve habitat for these species.

Rapid development of our continent has compromised the sustainability of many wildlife species. Large-scale landscape modifications have dramatically altered habitats and the functions they provide. It is possible that one such modification, large reservoirs, might be yielding positive benefits for many species of birds. We do not know what taxonomic groups of birds have gained or lost as a result of Corps water resources development. No research is currently underway on this issue by the Corps. However, the development of a well-planned, scientifically based approach to documenting the importance of these lands to birds would be the first step toward addressing many of the unanswered questions posed in this paper. We are interested in hearing of any ongoing activities related to management for these migratory birds on our lands.

Information Sources

Fischer, R. A. (2000). "Width of riparian zones for birds," *EMRRP Technical Notes Collection* (ERDC/EL TN-EMRRP-SI-09), U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Guilfoyle, M. P. (2001). "Sensitive western riparian songbirds potentially impacted by USACE reservoir operations," *EMRRP Technical Notes Collection* (ERDC TN-EMRRP-SI-19), U.S. Army Engineer Research and Development Center, Vicksburg, MS. *www.wes.army.mil/el/emrrp*

Hamilton, H. R., and Reinert, C. G. (1997). "Impacts of land acquisition and cost-sharing policies at two U.S. Army Corps of Engineers lakes: Old Hickory Lake and J. Percy Priest Lake, Tennessee," *Journal of Park and Recreation Administration* 15(4), 1-22

Kasul, R, L., Martin, C.O., and Jackson, R.S. (1998). "Natural resources management on Corps of Engineers water resources development projects: Practices, challenges, and perspectives on the future," Technical Report R-98-2, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Southwick Associates. (1995). "The economic contributions of bird and waterfowl recreation in the United States," Southwick Associates, Alexandria, VA.

University of Georgia. (1995). "National survey on recreation and the environment," Athens, GA.

U.S. Department of the Interior, Fish and Wildlife Service. (1991). "The 1991 national survey of fishing, hunting and wildlife-associated recreation."

H. Roger Hamilton is a research biologist at the ERDC Environmental Laboratory. He served the Corps in natural resource management and environmental planning positions in Headquarters and the Fort Worth District prior to his ERDC assignment. Roger holds a B.S degree in wildlife science from Ohio State University, an M.S. degree in political science from the University of Texas at Arlington, and a Ph.D. in geography from Louisiana State University. He is a graduate of the Planning Associates Program at Fort Belvoir, Virginia.

Richard A. (Rich) Fischer is a research wildlife biologist in the Stewardship Branch of the ERDC Environmental Laboratory. He received a B.S. degree in biology from Oglethorpe University, an M.S. in wildlife science from Auburn University, and a Ph.D. in wildlife and range sciences from the University of Idaho. He is presently conducting research on neotropical migrant birds on military lands and co-chaired a symposium on corridor management for biodiversity as part of The Wildlife Society's 1998 meeting.

High-Resolution Commercial Satellites Offer New Possibilities for Natural Resource Management

Mark R. Graves, Research Physical Scientist, ERDC Environmental Laboratory

New Satellite Sensors

Satellite imagery has long been touted as a useful tool for natural resource management. However, the limited spatial resolution of commercial satellite-based systems such as Landsat (30-m) has mostly limited the usefulness of these data to regional applications. During the last couple of years, however, new satellite systems have been designed and launched that are revolutionizing the commercial remote sensing industry, producing imagery that rivals the resolution of aerial photography. Currently, commercial imagery products with a resolution of 1 m (black and white) and 4 m (color) are available and plans have been announced for black and white systems with 0.5-m resolution. These new products can be used for applications that previously required expensive aerial photography.

The IKONOS satellite, operated by Space Imaging, Inc., was launched on September 24, 1999, and has been collecting high-resolution imagery for over a year. This satellite offers 1-m black and white and 4-m color imagery (Figure 1). IKONOS was to have been joined in orbit toward the end of 2000 by EarthWatch, Inc.'s Quickbird-1 satellite. Unfortunately, the satellite failed to achieve the proper orbit and was lost. EarthWatch plans to launch another system this year. Orbital Imaging Corporation plans the launch of two OrbView satellites this year. The Quickbird and OrbView satellites will also offer 1-m black and white and 4-m color imagery. Finally, ImageSat International plans the launch of several high-resolution satellites (one this year with 1.5-m black and white capability).

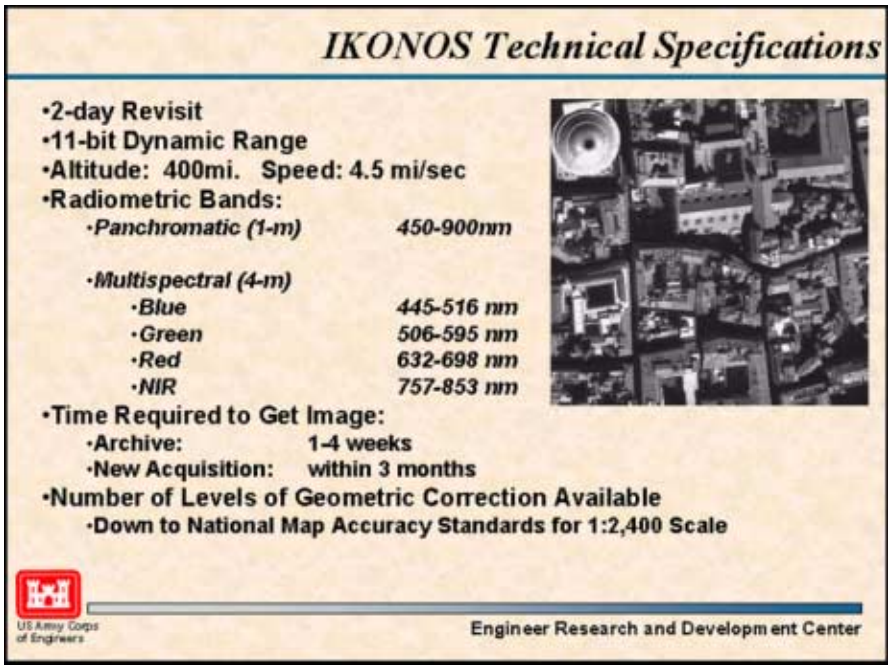


Figure 1. IKONOS technical specifications

Potential Applications

High-resolution imagery can be used for a number of applications related to natural resource management. Panchromatic imagery can be useful for mapping bank erosion (when compared to earlier photography), recreational applications (such as boat count surveys), compliance monitoring, detecting possible encroachments, or simply as a base map for a GIS. Multispectral imagery could be useful for mapping suspended sediment concentrations in reservoirs, or mapping vegetation/habitat or forest stands for timber management applications.

The Corps of Engineers Remote Sensing/GIS Center (RSGISC), at the Engineer Research and Development Center (ERDC) Cold Regions Research and Engineering Laboratory, was established to assist the Corps user community in applying remote sensing and spatial data management techniques. More information regarding the potential uses of imagery can be found by contacting the center at: (*http://www.crrel.usace.army.mil/rsgisc/*).

The 1-m resolution black-and-white image of Eudora, Mississippi (Figure 2) was collected November 9, 1999 by the IKONOS satellite and illustrates the level of

Figure 2. IKONOS Imagery of Eudora, MS (Credit: *Spaceimaging.com*)

detail available from the new suite of high-resolution satellite sensors. The image shows part of the Mississippi River, sandbars along the shoreline, trees, levees, and wetlands. Imagery like this could be used by federal mapping agencies to map wetlands, monitor environmental conditions, assess agriculture, conduct habitat studies, monitor jetties for turbulence in the river, assess levee conditions, evaluate land use between the levee and the river, and monitor commercial barge transportation on the river. Note that individual tree crowns are quite distinguishable.

Limitations Remain

Although imagery data can be extremely useful for change detection and monitoring efforts, satellite data can also present a number of challenges. It is often difficult to obtain images over the area of interest during the desired timeframe. The revisit characteristics of the satellites, as well as the presence of cloud cover, can limit the availability of data. When change is being detected, this is less of a problem, as archived data can be used. However, the limitation is critical when data are required in a very specific timeframe; for example, when imagery must coincide with field data collection, such as in mapping suspended sediment concentrations.

Ordering Imagery

The DoD maintains a system for retrieving and disseminating commercial satellite imagery. The U.S. Army's Commercial/Civil Imagery (C2I) Program was established by the Office of the Assistant Chief of Engineers in 1990 to act as the U.S. Army's coordinator for civilian image acquisitions. The program coordinator is housed at the Topographic Engineering Center (TEC) in Alexandria, VA. The primary point of contact is Mary Pat Santoro (703-428-6909, *msantoro@tec.army.mil*).

Anyone wishing to use commercial satellite imagery should first check to see if imagery already purchased by the DoD can serve their needs. When supplied with geographic coordinates (i.e., latitude and longitude) that define the area of interest, the C2I Program staff generates a list of currently available images corresponding to the project area. If suitable imagery is available, reproduction and distribution are usually free to Army installations.

If new satellite imagery must be purchased, costs will vary widely depending on the level of preprocessing performed by the vendor.

For More Information

Further information regarding the sensors mentioned above can be found at the following Internet Web sites:

Companies:

SpaceImaging, Inc *http://www.spaceimaging.com/*
Orbital Imaging Corp. *http://www.orbimage.com/*
EarthWatch, Inc. *http://www.digitalglobe.com/*

Corps Resources:

Remote Sensing/GIS Center
http://www.crrel.usace.army.mil/rsgisc/
C2I Program *http://www.tec.army.mil/CCIO/satlink.htm*

Recreation Area Modernization Program (RAMP)

Compiled by Bonnie F. Bryson

Modernizing recreation areas managed by the U.S. Army Corps of Engineers is an issue nationwide. More than 90 percent of the 456 Corps water resources development projects that provide outdoor recreation opportunities to the public were constructed before 1980. In fact, 40 percent of those same projects were constructed prior to 1960. The age of the Corps-managed recreation areas is, in many cases, of a vintage similar to that of the project. Whether it is a problem with accessibility, inadequate RV hook-ups, or an issue with safety, Corps recreation areas must be modernized to meet the needs of present customers, underserved populations, and future generations.

The Chief of Engineers has identified revitalization of Corps-managed recreation areas as a priority. The Recreation Area Modernization Program (RAMP) will help managers meet the needs of today's recreation users by improving facility functionality and protecting the natural resources that draw people to our areas. This will include meeting the needs of the various ethnic groups that make up today's diverse population. Modernization with state-of-the-art materials and designs can reduce the cost of future maintenance, as well as eliminate much of the costly maintenance backlog. Modernization will also enhance visitor willingness to pay user fees to improve the self-sustaining posture of the Corps' recreation program.

In January 2000, CECW-ON appointed a RAMP task force chaired by Mike Miller, Chief of Operations, Little Rock District and composed of NRM team members who collectively represent a wealth of field-level experience in Corps recreation facilities and services management: John Marnell, Tulsa District; Roy Proffitt, Sacramento District; Jim Davis, Kansas City District; Jeff Rose, Savannah District; Bonnie Bryson, Louisville District; and Scott Jackson, ERDC. This group's charge is to assist the NRM Branch in developing recreation facility and services standards. The goal is to establish national recreation facility standards, which will reduce the costs associated with facility design and maintenance, and provide better facilities to our customers.

An important component of the RAMP initiative is outreach activities to provide customer feedback on modernization efforts. This will ensure that RAMP efforts meet the needs of our customers, and give full consideration to demographic trends, legislative requirements, new technology and equipment, and concerns for safety affecting recreation use at our projects. Public outreach activities include informal interviews with visitors at recreation areas originally scheduled for modernization in FY01. Another important outreach activity is contact with stakeholders and representatives of the recreation industry to solicit their input. Additional outreach activities will improve understanding of existing and potential patterns of ethnic minority use of Corps areas, to help the Corps to improve service and reduce participation barriers for potential ethnic minority visitors to Corps projects.

Fees Collected - Modernized Areas at Canyon Lake FY95 - FY00

Park	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Potter's Creek	49,579	64,426	66,817	39,567	87,471	127,852	203,792
Comal	16,151	0	41,791	34,897	47,293	49,366	57,213

Citations Issued - Modernized Areas at Canyon Lake FY95-FY00

Park	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Potter's Creek	11	14	3	1	2	0	0
Comal	45	4	0	3	2	3	2

Notes: In 1997 parks were closed for three months of the peak recreation season due to flood impoundments.
In FY99 all citations were water-safety-related violations.
In FY00 seven out of nine citations were water-safety-related violations.

Examples of the benefits of modernization are provided by the experience at Canyon Lake, Texas. Prior to RAMP becoming a national initiative, the Fort Worth District realized that renovation might solve long-existing visitor use management problems. They established their own modernization program utilizing a team approach in planning, funding, and construction. Selected areas at Canyon Lake, Texas within the Little River Project were targeted for the first modernization efforts. The success stories at Comal Park and Potters Creek Recreation Areas illustrate the benefits that may be realized by modernization; the real proof is in the numbers.

In the fall of 1999, the national initiative was begun when CECW-ON asked projects to submit modernization proposals for funding in FY01. Additional modernization proposals were requested in April 2000 for funding in 2002. Obviously, funding is needed to make RAMP an on-the-ground reality. The President's FY01 budget included $27 million for the Construction General account to support modernizing recreation areas managed by the Corps of Engineers. This was to be the first year of a 5-year/$330-million program to modernize about 225 Corps-managed recreation areas. Unfortunately, the House and the Senate chose not to include funding for the RAMP Program in the FY01 appropriation because it was a new start. No new starts were included in Committee Recommendations for the Corps.

This FY, the funding strategy has changed. The FY00 list of 17 areas and the top-priority areas on the FY01 list have been combined to form one list. For FY02, the ceiling for the list is $50 million, which includes $3 million for a new cost-sharing effort with existing sponsors such as states, counties, and cities already having facilities on Corps projects. The idea here was that our partners also need funding to upgrade their areas and may be willing to support the overall Corps effort if they see themselves as getting a small portion of the funding "pie." Currently, there are 27 areas on the Corps list plus three cost-shared areas. The final decision on which cost-shared areas to include will be made shortly. Following FY02, the plan is to fund the Corps portion and the cost-shared portion at the $70-million level for the next 4 years.

In addition, the Corps strategy for obtaining funding has changed this year. Last year, RAMP areas were included in the budget as a remaining item and, as stated above, were considered new starts. This year, the Corps intends to include these items in the project budgets as "Construction General" items. The Corps leadership believes this strategy will be more successful.

Reinvention Laboratories Come to Corps Lakes!

Things are beginning to happen! One of the recommendations of the National Recreation Lakes Study Commission was to create a Federal Lakes Recreation Leadership Council to coordinate recommendations of the Commission. This has been done. The Council membership is composed of executives from the seven Federal agencies that manage lakes. In addition to the Corps, the agencies are:

Bureau of Land Management
Bureau of Reclamation
Fish and Wildlife Service
Tennessee Valley Authority
National Park Service Forest Service

The Council is co-chaired by the Commissioner of the Bureau of Reclamation and MG Hans Van Winkle, Director of Civil Works, Corps of Engineers.

Recently, the Council accomplished a major action recommended by the Commission. The Commission recommended that the Council "Develop a National Recreation Lakes Demonstration Program and apply for Reinvention status for the program." The Council has created a National Recreation Lakes Demonstration Program and was successful in applying for Reinvention Laboratory status. As many of you may remember, a

request for nominations for Corps lakes went out several months ago. The response was excellent! From those nominations, 13 Corps lakes around the country were selected. Here's the list of selected lakes:

Skiatook Lake, OK
Conchas Lake, NM
Kakaskia River Watershed, IL
Lake Ouachita, AR
Center Hill Lake, TN
Youghiogheny River Lake, PA
Lake Kaweah, CA
Rathbun Lake, IA
Lake Sakakawea, ND
Grapevine Lake, TX
Lake Cumberland, KY
Kinzua Lake, PA
Lake Lanier, GA

Over 30 lakes in all were designated by the respective agency as Reinvention Laboratories.

What's a Reinvention Laboratory? Here's the official description:

The National Partnership for Reinventing Government (NPR) awards the designation of "Reinvention Laboratory" to Federal agency activities that experiment with or test new and better ways of doing business that cut through red tape, exceed customer expectations, and unleash innovations for improvement from employees. When successful innovations occur, the NPR facilitates the communication of the successes to other agencies for their consideration and possible adoption, thus continuously improving government.

For our purposes, we see these designations as opportunities to remove bureaucratic barriers that hamper efficient management of our projects. There is no license to ignore legislative requirements, but agency policies and regulations that hinder good management are the target. This is no blank check! There is a requirement for District Council review and District Commander approval prior to undertaking any proposal to change policy locally.

The kickoff has already occurred. Lake managers from all the designated laboratories met at Lake Lanier, Georgia in December 2000. MG Van Winkle addressed the attendees and strongly encouraged them to take full advantage of this opportunity to improve our collective management of recreation at Federal Lakes. He has expressed strong support for the concept and is monitoring progress on a regular basis.

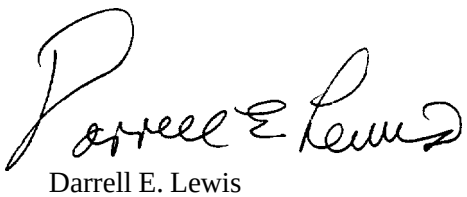
So, what's in it for you if you don't happen to be located at one of these lakes? The plan is to take the good initiatives that surface from the laboratory lakes, evaluate the potential for agency-wide application, and if viable, incorporate them into Corps policy.

I'll keep you posted on the progress of this and other initiatives as they occur.

LATE NEWS:

Speaking of keeping you posted, you can look forward to improved communications and access to information within the Natural Resources Management community. At our national conference in Portland, Oregon this April, we launched our National Resource Management Gateway initiative, a new information Web site. The site provides Corps personnel with an impressive array of current (updated regularly) information on the Corps Recreation business function either directly or by hot link. Since this effort is funded by recreation funds, the focus of the first stage will be the Recreation business function. The Environmental Stewardship and Environmental Compliance business functions will be added as soon as possible. The site can be found at:
http://corpslakes.usace.army.mil

Essayons!



Darrell E. Lewis
Chief, Natural Resources Management

NRRP
NATURAL RESOURCES RESEARCH PROGRAM

RECN NATURAL RESOURCES RESEARCH PROGRAM TES

This bulletin is published in accordance with AR 25-30. It has been prepared and distributed as one of the information dissemination functions of the Environmental Laboratory of the U.S. Army Engineer Research and Development Center. It is primarily intended to be a forum whereby information pertaining to and resulting from the Corps of Engineers' nationwide Natural Resources Research Program can be rapidly and widely disseminated to Headquarters, and Division, District, and project offices as well as to other Federal agencies concerned with outdoor recreation. Local reproduction is authorized to satisfy additional requirements. Contributions of notes, news, reviews, or any other types of information are solicited from all sources and will be considered for publication so long as they are relevant to the theme of the Natural Resources Research Program, i.e., to improve the effectiveness and efficiency of the Corps in managing the natural resources while providing recreation opportunities at its water resources development projects. This bulletin will be issued on an irregular basis as dictated by the quantity and importance of information to be disseminated. The contents of this bulletin are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products. Communications are welcomed and should be addressed to the Environmental Laboratory, ATTN: R. Scott Jackson, U.S. Army Engineer Research and Development Center (CEERD-EV), 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, or call 601-634-2105.

James R. Houston

James R. Houston, PhD
Director

DEPARTMENT OF THE ARMY
ENGINEER RESEARCH AND DEVELOPMENT CENTER
WATERWAYS EXPERIMENT STATION, 3909 HALLS FERRY ROAD
VICKSBURG, MS 39180-6199

OFFICIAL BUSINESS
CEERD-EV-I

BULK RATE
U.S. POSTAGE PAID
Vicksburg, MS
Permit No. 85